CENTER FOR ASYNCHRONOUS CIRCUIT AND SYSTEM DESIGN

CENTER

The Center was established in 1997 to complete the development of software design tools which will allow engineers to efficiently design digital circuits that do not require global clocking circuits in order to operate.

TECHNOLOGY

While most of today's digital systems use a synchronous global clock to coordinate operations within an integrated circuit, the challenge of distributing such global clock signals becomes increasingly difficult as circuit densities increase. Asynchronous circuits do not require a global clock and therefore do not require clock distribution lines as traditional synchronous circuits do. Industry has not moved to asynchronous design in large part owing to a lack of computer aided design (CAD) tools supporting this technology. Meeting this need is the direct target of this Center. It is working with companies such as Intel and IBM not only to help solve their future asynchronous design problems, but also their current difficulties in the analysis and verification of high-speed integrated circuits.

ACCOMPLISHMENTS

The Center has completed the compiler and timing analyzer portion of the CAD tool and expects to complete an alpha version of the tool this year. Patent applications are being prepared for submission in 1998. Intel Corporation and Cogency Technology are currently evaluating prototypes of the tool. The tool has also recently been used at IBM to analyze and verify the aggressive high-speed circuits used in their Gigahertz research microprocessor.

CONTACT

Directors: Chris J. Myers, Ph.D., & Erik Brunvand, Ph.D.
University of Utah, Salt Lake City, Utah
Phone (801) 581-6490, Fax (801) 581-5281
myers@ching.elen.utah.edu
http://www.async.elen.utah.edu

Can You Imagine...

. . . a personal computer that runs significantly faster than today's models because it does not depend on an internal clock to synchronize its various operations?

THE CENTER DEVELOPS DESIGN TOOLS FOR DIGITAL ENGINEERS CREATING NEW MICROPROCESSORS
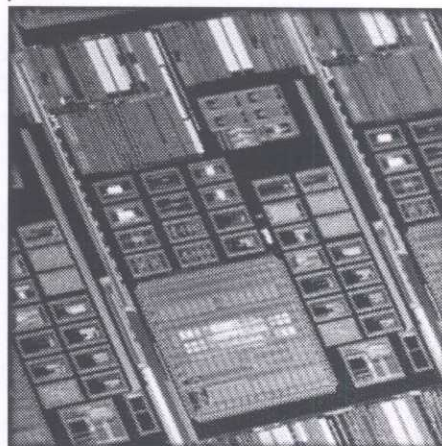
■ Photo of the IBM Gigahertz research microprocessor as seen through a microscope. Up to 30% of the surface area of a high speed microprocessor chip may be required to distribute clocking signals.